

FIG. 1A
Prior Art

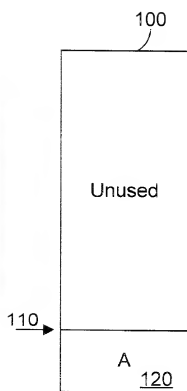


FIG. 1B
Prior Art

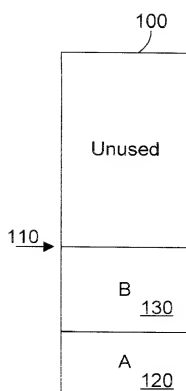


FIG. 1C
Prior Art

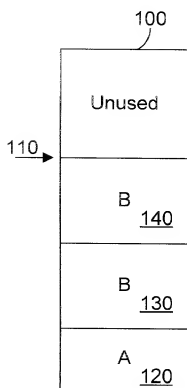


FIG. 1D
Prior Art

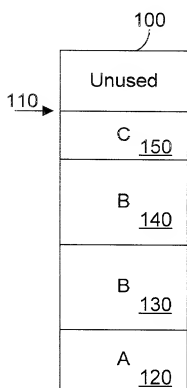


FIG. 1E
Prior Art

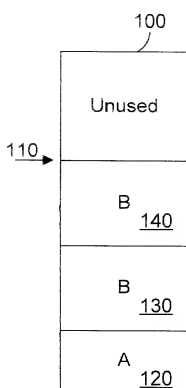
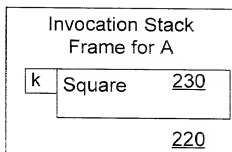
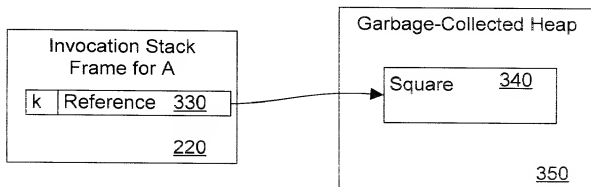
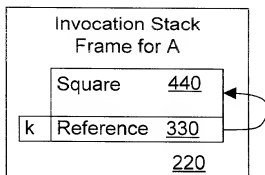


FIG. 1F
Prior Art

C++
A() {
 Square k;
 :
}
}

FIG. 2A Prior ArtFIG. 2B Prior Art

Java
A() {
 :
 Square k = new Square();
 :
}
}

FIG. 3A Prior ArtFIG. 3B Prior ArtFIG. 3C Prior ArtFIG. 4 Prior Art

```
A() { NO ESCAPE
  ⋮
  Square k = new Square();
  ⋮
}
```

FIG. 5A Prior Art

```
static Square classVar;
A() { GLOBAL ESCAPE
  ⋮
  Square k = new Square();
  classVar = k;
  ⋮
}
```

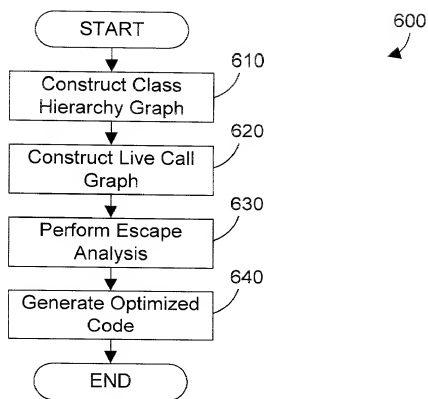
FIG. 5B Prior Art

```
Square A() { ARG ESCAPE
  ⋮
  Square k = new Square();
  return k;
  ⋮
}
```

FIG. 5C Prior Art

```
A(List L) { ARG ESCAPE
  ⋮
  Square k = new Square();
  L.addToList(k);
  ⋮
}
```

FIG. 5D Prior Art

FIG. 6 Prior Art

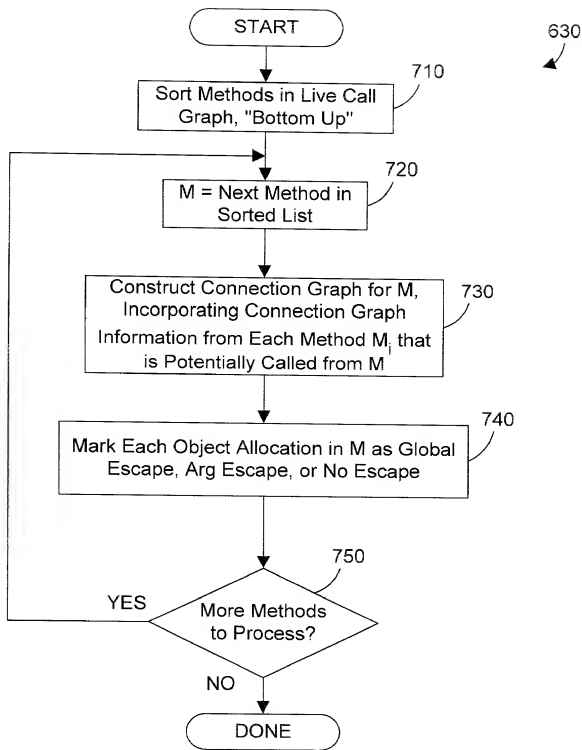


FIG. 7 Prior Art

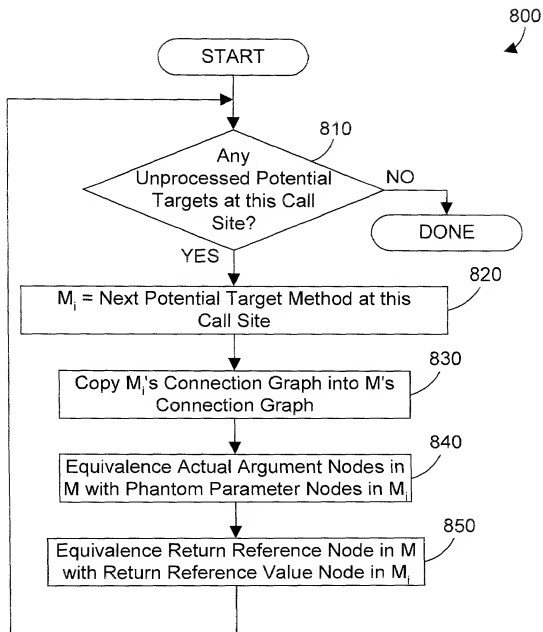
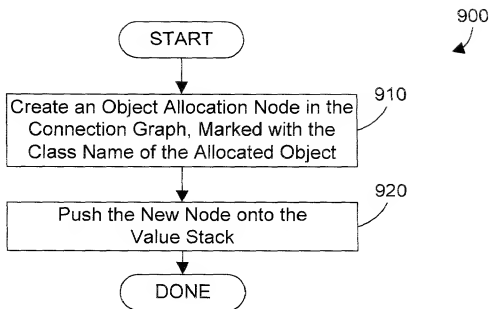


FIG. 8 Prior Art

FIG. 9 Prior Art

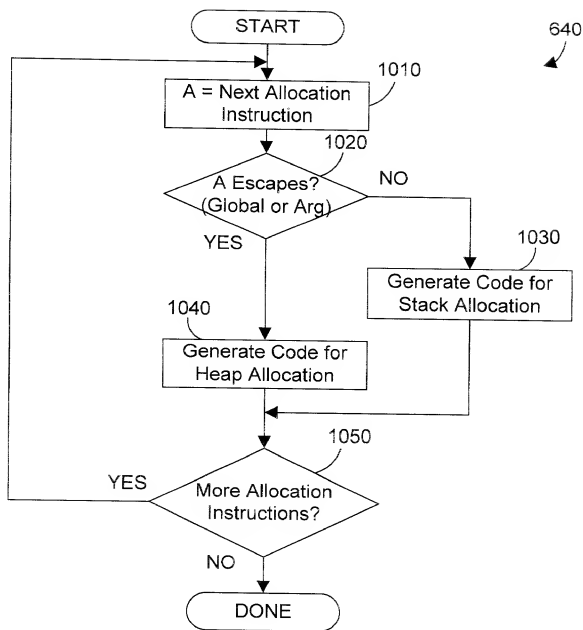


FIG. 10 Prior Art

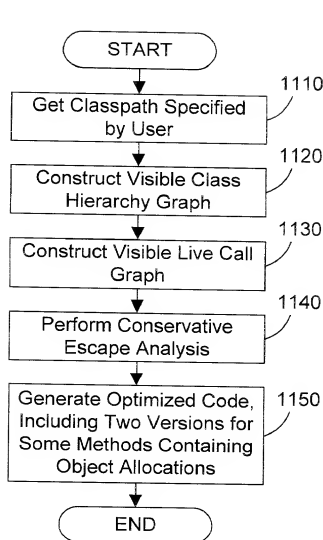


FIG. 11

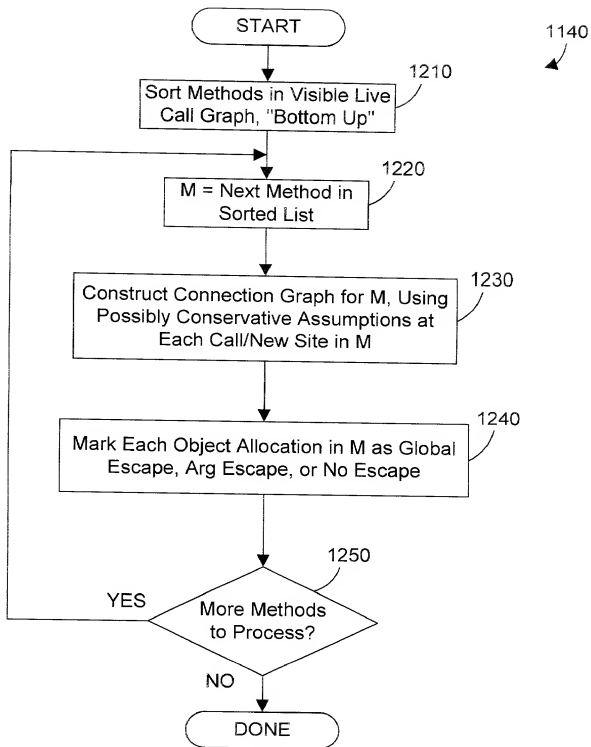


FIG. 12

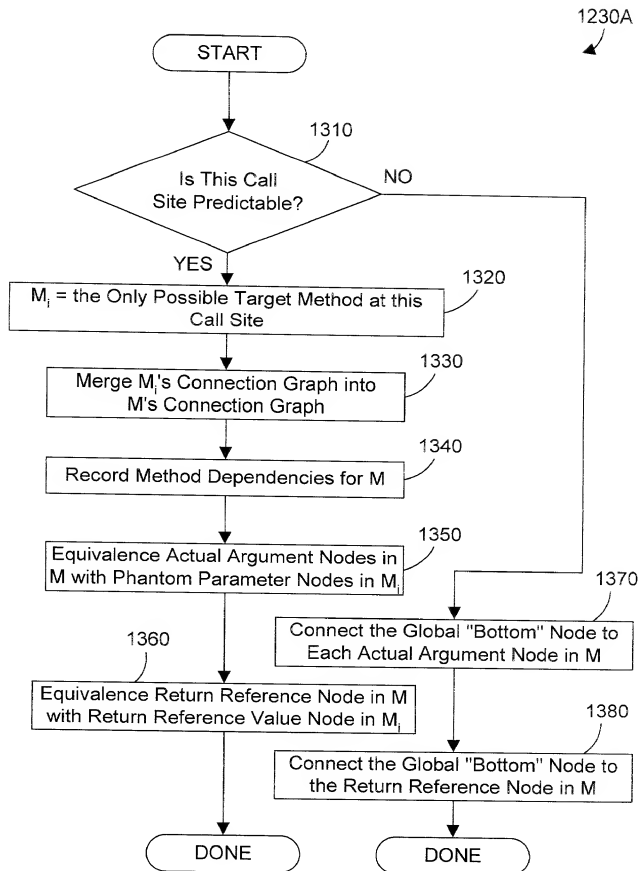
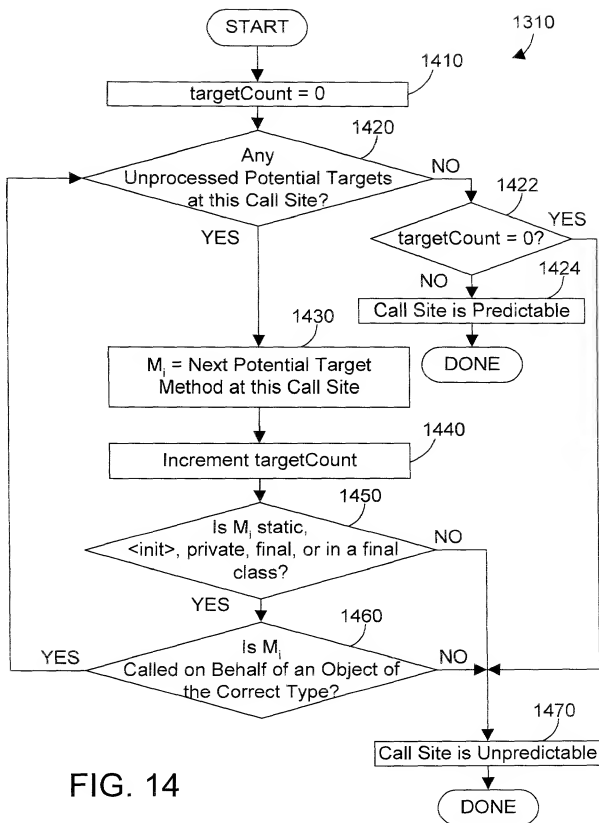


FIG. 13



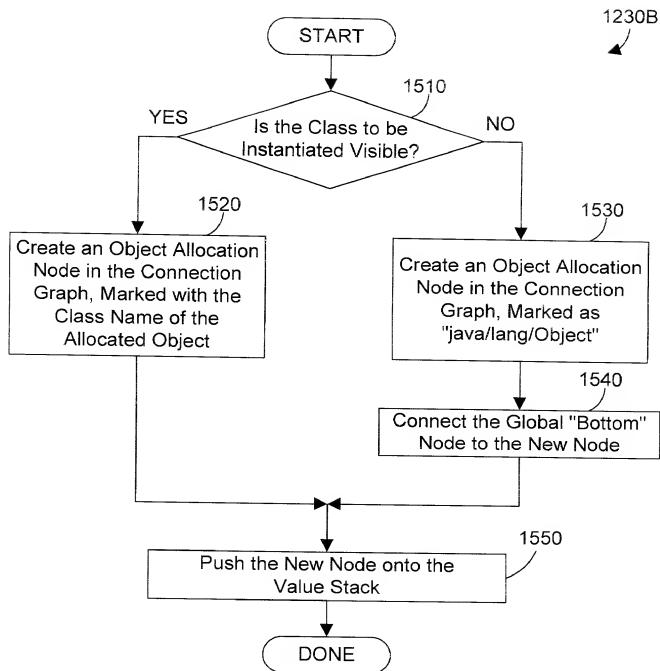


FIG. 15

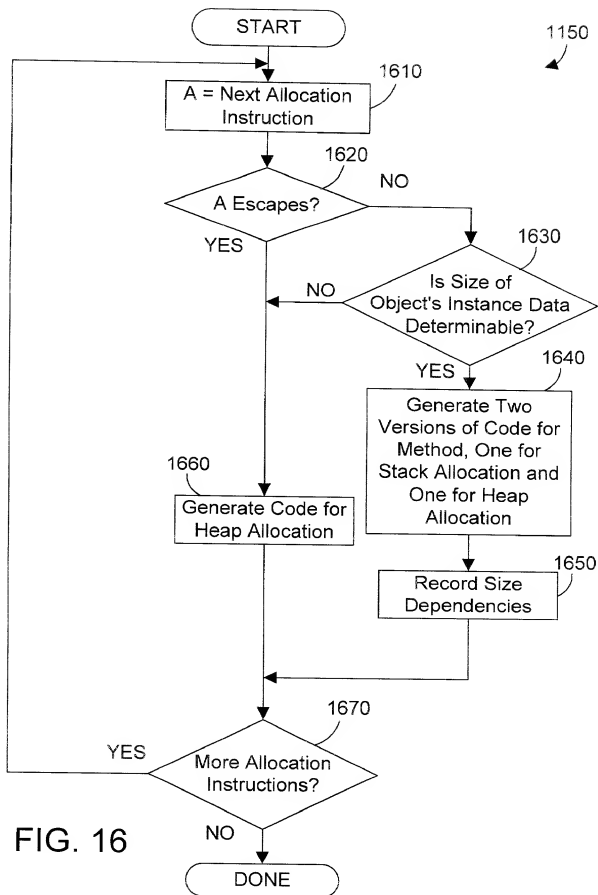


FIG. 16

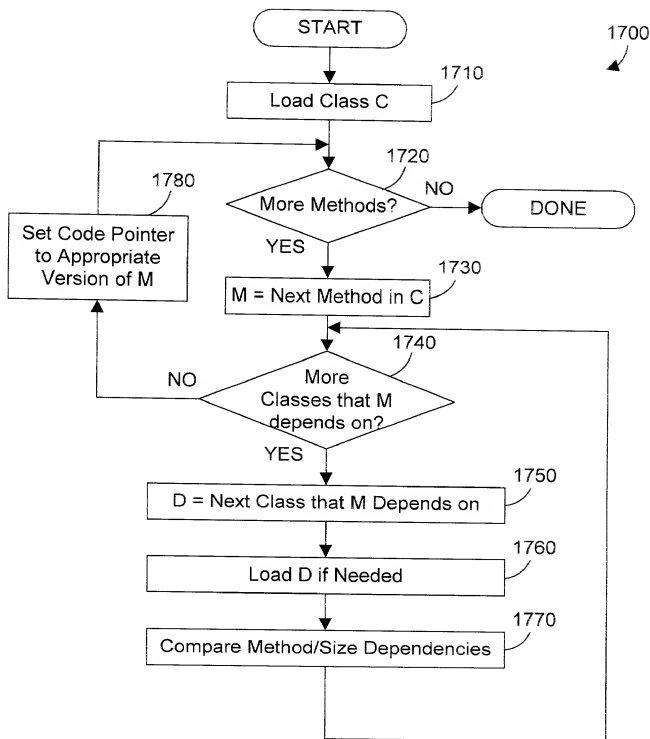


FIG. 17

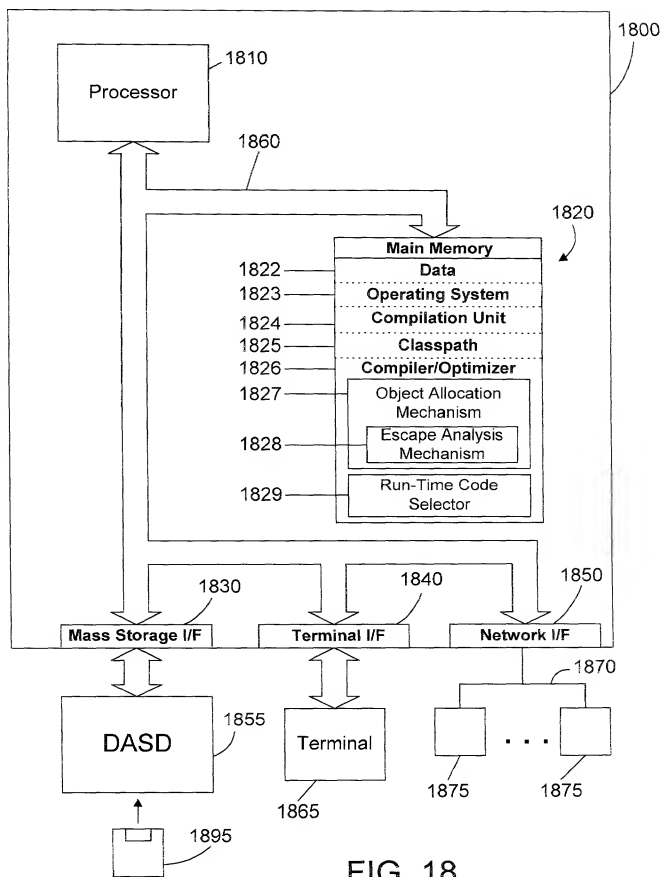


FIG. 18


```

class Instrument {
    abstract void identify();
};

final class Intensity {
    Intensity(int t, int f) {privT=t; privF=f;}
    int tautness() {return privT;}
    int force() {return privF;}
    private int privT;
    private int privF;
};

class WindInstrument extends Instrument {
    final void identify() {System.out.println("Wind instrument");}
    void blow(int force) { . . . }
    abstract void setEmbouchure(int tautness);
    abstract void loudHighNote(Intensity i);
}

final class Valve {
    private Boolean depressed;
    void depress() {depressed=true;}
    void release() {depressed=false;}
};

class BrassInstrument extends WindInstrument {
    private Valve[ ] valves;
    BrassInstrument (Valve[ ] v) {valves=v;}
    private Valve getValve(int i) {return valves[i];}
    void depressValve(Valve which) {which.depress();}
    final void setEmbouchure(int tautness) { . . . }
    void loudHighNote(Intensity i) {
        depressValve(getValve(2));
        setEmbouchure(i.tautness());
        blow(i.force());
    }
};

```

FIG. 19A

```

class WoodwindInstrument extends WindInstrument {
    void depressKey(int which) { . . . }
    void setEmbouchure(int tautness) { . . . }
    void loudHighNote(Intensity i) {
        depressKey[4];
        setEmbouchure(i.tautness());
        blow(i.force());
    }
};

class Drumstick { . . . };

class Mallet extends Drumstick { . . . };

public class Player {
    void messAroundWith(Instrument ax) {
        ax.identify();
        Intensity inten = new Intensity (6,88); //S1
        ax.loudHighNote(inten);
    }
    void beatDrum(Drum drum) {
        Intensity inten = new Intensity(1,1); //S2
        Drumstick m = new Mallet();           //S3
        drum.strikeWith(m);
    }
};

```

FIG. 19B

```

class PercussionInstrument extends Instrument { . . . }

class Drum extends PercussionInstrument {
    final void strikeWith(Drumstick d) {System.out.println("Boom"); }
};

class Percussionist extends Player {
    void acquireEquipment() {
        Drum d = new Drum(); //S4
        Mallet m = new Mallet(); //S5
    }
};

```

FIG. 20

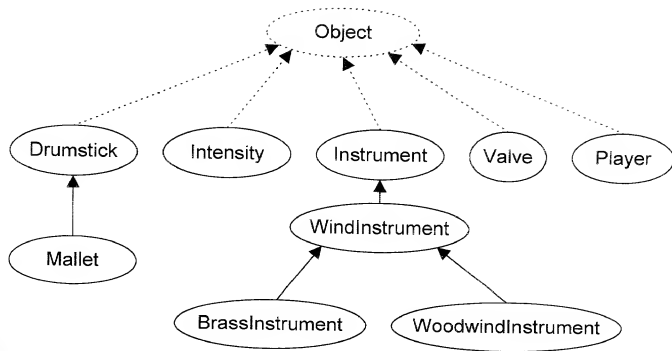


FIG. 21

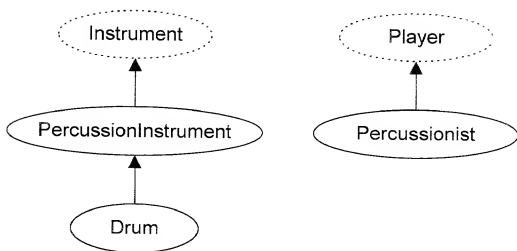


FIG. 22

2300

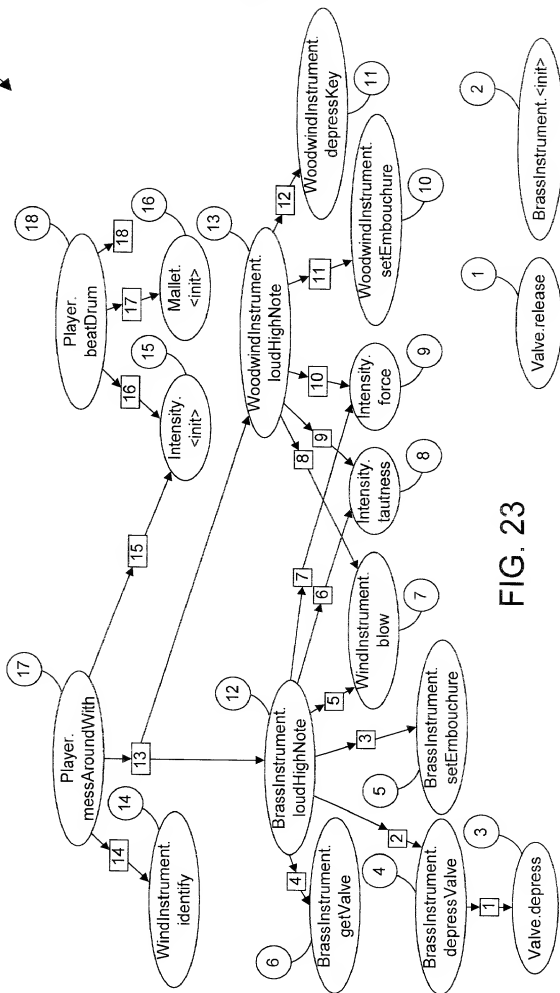


FIG. 23

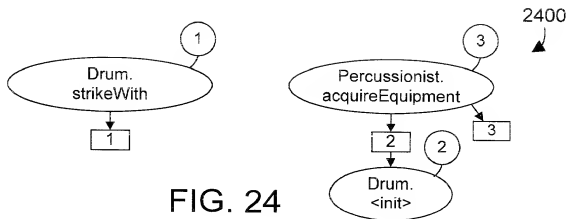
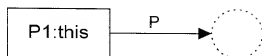
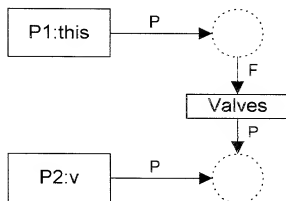


FIG. 24



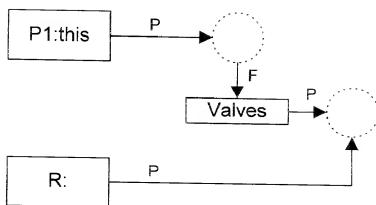
- (1) Valve.release
- (3) Valve.depress
- (5) BrassInstrument.setEmbouchure
- (7) WindInstrument.blow
- (8) Intensity.tautness
- (9) Intensity.force
- (10) WoodwindInstrument.setEmbouchure
- (11) WoodwindInstrument.depressKey
- (14) WindInstrument.identify
- (15) Intensity.<init>
- (16) Mallet.<init>

FIG. 25A



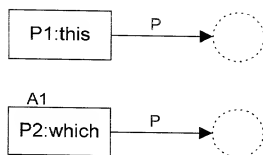
- (2) BrassInstrument.<init>

FIG. 25B



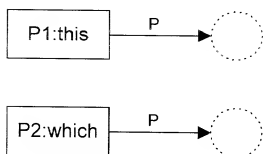
(6) BrassInstrument.getValve

FIG. 25C



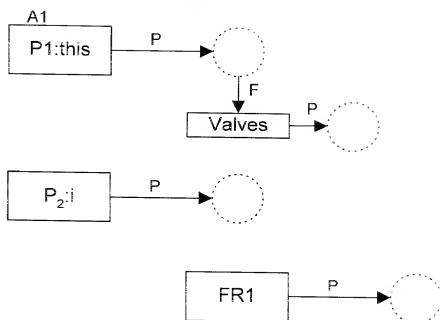
Before Call to Valve.depress

FIG. 26A



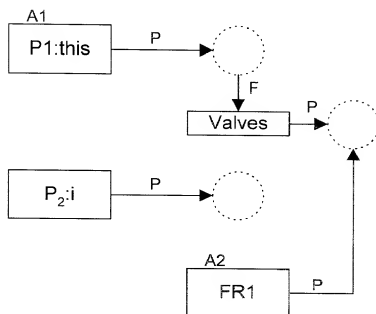
Final Connection Graph

FIG. 26B



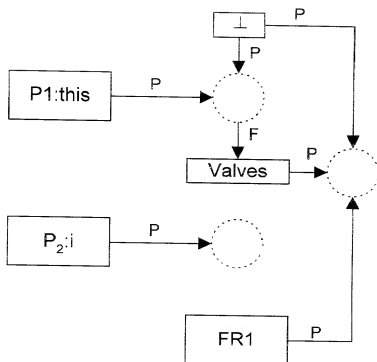
Before call to BrassInstrument.getValue

FIG. 27A



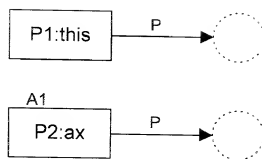
Before call to BrassInstrument.depressValve

FIG. 27B



Before call to Intensity.tautness

FIG. 27C



Before call to Instrument.identify

FIG. 28A

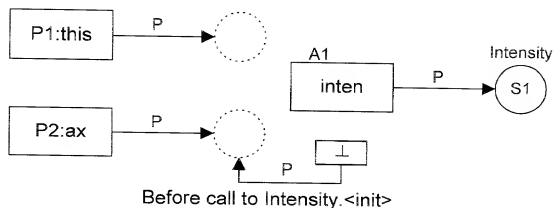
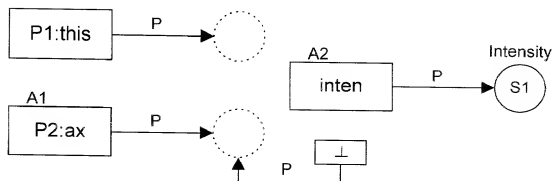
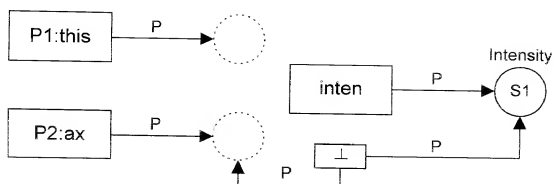


FIG. 28B



Before call to Instrument.loudHighNote

FIG. 28C



Final Connection Graph

FIG. 28D

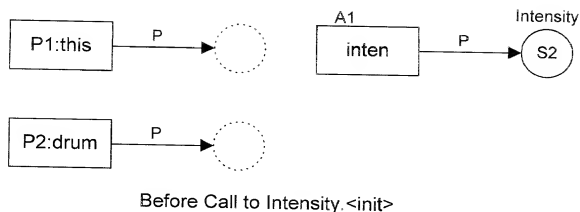


FIG. 29A

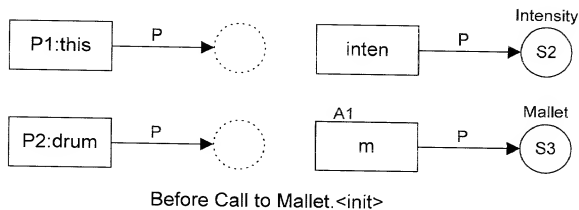


FIG. 29B

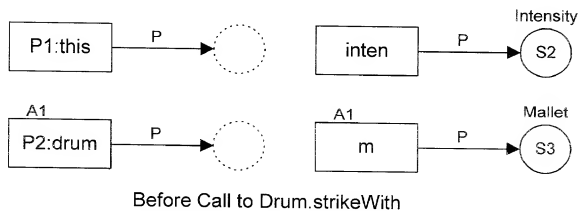
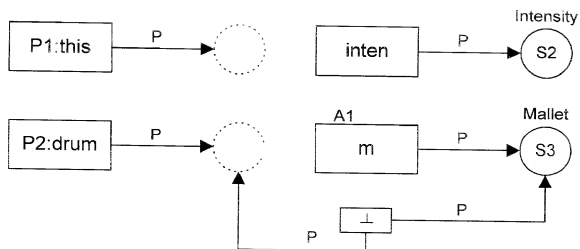
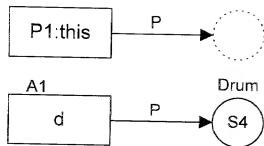


FIG. 29C



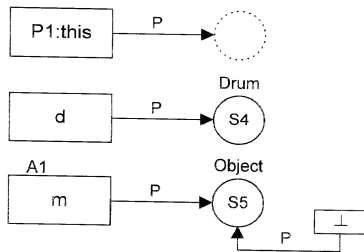
Final Connection Graph

FIG. 29D



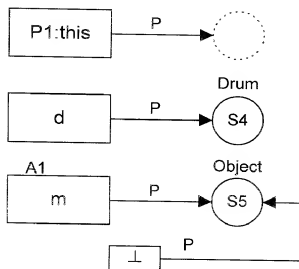
Before Call to Drum.<init>

FIG. 30A



Before Call to Mallet.<init>

FIG. 30B



Final Connection Graph

FIG. 30C

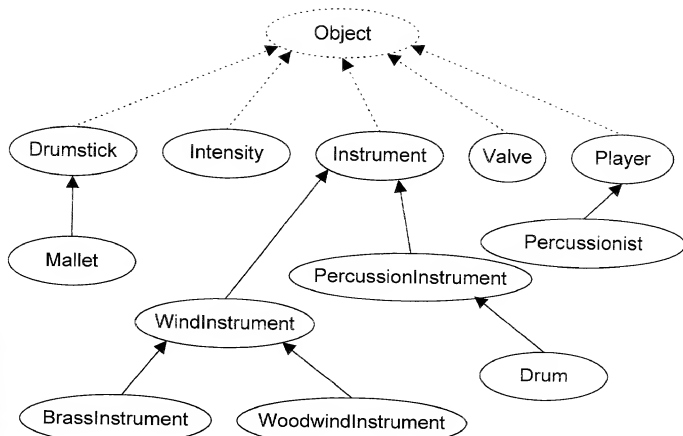


FIG. 31

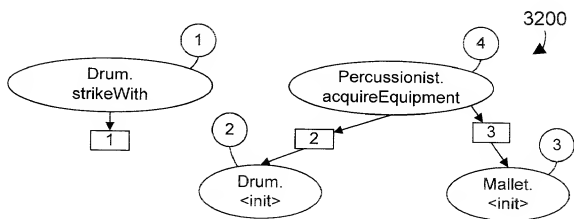
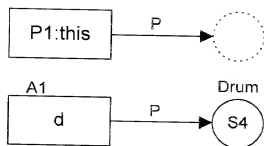
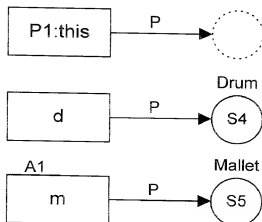


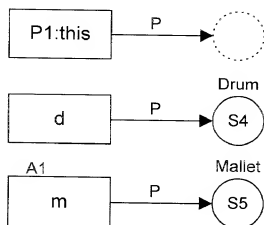
FIG. 32



Before Call to Drum.<init>

FIG. 33A

Before Call to Mallet.<init>

FIG. 33B

Final Connection Graph

FIG. 33C